

## Necessary Angels

They are not doctors. They are not nurses. They are illiterate women from India's Untouchable castes. Yet as trained village health workers, they are delivering babies, curing disease, and saving lives—including their own.

**By Tina Rosenberg**

When Sarubai Salve walks through her village, she gathers a crowd. Salve is 56, a slim, reserved, somewhat stern woman with wire-rimmed aviator glasses and long black hair streaked with gray. On most days she sets off twice, at nine in the morning and six at night, through the streets of Jawalke, a village of about 240 families in the central part of India's Maharashtra state. She carries a blood-pressure cuff, a stethoscope, a baby scale, and a thin logbook. She is often accompanied by Babai Sathe, an exuberant woman of 47, a bit zaftig, with a toothy smile.

The two of them are responsible for keeping Jawalke healthy. They deliver babies and then visit them. They see pregnant women and old people. They take blood pressure and check on villagers cured of leprosy.

Today, a sunny morning in January, the first patient they see is Rani Kale. The house where Kale is staying is made of mud, dirt, and cow dung with a thatched roof. A cat perches on one slope. In the yard, bricks are stacked up, clothes are slung over a line, and small fire pits hold twigs for cooking sorghum flatbread. A brown cow lies contentedly in the shade.

Kale is pregnant. If she were a resident of Jawalke, she would have been seen by Salve many times and sent to the hospital for a sonogram. But she is from a village an hour away. She has come to her mother's house to give birth.

This will be Kale's second baby. She has had no prenatal care until ten days ago, when she first arrived in Jawalke. Salve examined her and advised her to get a sonogram. But Kale never did, and now birth is days, or perhaps hours, away. Salve checks Kale's blood pressure, examines her nails and eyes for signs of anemia, and feels her legs for water retention. She takes Kale inside the hut and lays her on a mat for a pelvic exam. She puts her head on Kale's belly, listening to the heartbeat.

But Kale's belly is so tight that it is hard to detect anything. Sathe looks worried; she believes the baby is out of position. "But sometimes they move," she says. She tells Kale, "We'll come back in an

hour or two. If the position is still not normal, we'll take you to the hospital. If you begin labor, just send someone for us." Salve asks one of Kale's aunts to give her tea. "Everything will be fine," she says reassuringly.

Next stop is the home of Manisha Mane, mother of a three-month-old boy with a cleft palate. Sathe and Salve watch the baby suckle, and then put him in a sling and weigh him: nine pounds. Not enough. "You have to supplement," says Salve. They tell Mane how to make a porridge of sorghum, oil, and vegetables. They show her where the baby falls on a growth chart and talk about vaccinations. After tending to Mane's mother-in-law, who suffers from hypertension, Sathe stops at a kindergarten where a government worker is scheduled to give vaccines. When word gets out, the kindergarten quickly becomes a makeshift clinic. Pregnant women and mothers of newborns stop in, and older women come in for blood-pressure checks.

Jawalke is a very different place because of Salve and Sathe. Salve has been doing rounds in Jawalke since 1984. By her own count, she has delivered 551 babies and says she's never lost a single infant or mother. "When I started, the children all had scabies and there was filth everywhere," she says. Small kids used to die. Pregnant women died during and after delivery. Poor sanitation led to malaria and diarrheal diseases. Children went unvaccinated. Leprosy and tuberculosis were common.

I ask Salve about Jawalke's health problems today. "Hypertension and diabetes," she says— rich-country illnesses. In most of rural India, only the fortunate suffer from such diseases.

The shortage of doctors in poor countries is widely lamented, especially in English-speaking countries such as Ghana, Malawi, and India, where doctors often leave for high-paying jobs abroad. They are pushed to leave by abysmal conditions—major hospitals may have only a handful of doctors and a dozen nurses to care for hundreds. Patients die unnecessarily. Pay is terrible and often months late. But doctors and nurses are also pulled to places like the United States, Canada, Britain, and Australia. These countries don't have doctors willing to work in rural areas or enough nurses at all. They fill the gap with health professionals from poor countries.

The result is that Africa and to a lesser extent India now effectively subsidize medicine in the U.S. and Britain. Ghana, Malawi, and Zimbabwe are among 16 African nations with more doctors practicing outside their countries than in them. In recent years the number of nurses leaving Malawi for jobs has outstripped the number graduating from nursing school. The medical brain drain is a

problem being discussed by the G8 forum of the world's richest countries, the WHO, and Harvard University, among others.

But enticing doctors and nurses to stay home may not be the answer to the health care crisis in poor countries. I asked Nils Daulaire, the head of a U.S.-based group called the Global Health Council, what can be done about the fact that there are only, for example, roughly three doctors for every 150,000 people in Malawi.

"Can we get it down to two? Or one?" he said. Daulaire was only half joking. Doctors, he says, are not the solution for the world's poorest people. Even if they do not emigrate, doctors stay in the cities. In Malawi half of the country's doctors work in just one of four hospitals in major cities, although Malawi is about 85 percent rural. With a handful of exceptions, doctors in poor countries become doctors for the same reason most people all over the world do: to make a good living. If Malawi or India does succeed in recruiting a doctor for a health post in the countryside, chances are that a patient looking for him there will not find him. He will be in the capital, treating patients who can pay.

Even doctors who do treat villagers, moreover, rarely spend time teaching them about nutrition, breast-feeding, hygiene, and using home remedies such as oral rehydration solutions. They don't help villages acquire clean water and sanitation systems or improve their farming practices—ways to eliminate the root causes of disease. They don't work to dispel myths that keep people sick. They don't combat the discrimination against women and low-caste people that is toxic to good health. Doctors also present a powerful institutional lobby that can block the real solution for places like Jawalke: training villagers like Sarubai Salve and Babai Sathe to do all these things.

"Doctors promote medical care because that's where the money is," says Raj Arole. "We promote health." The distinction is crucial to Arole, 75, a doctor himself, and the founder, along with his wife, Mabelle (who died in 1999), of the program, known as Jamkhed, that trained Salve and Sathe. The Aroles graduated top in their class from one of India's most prestigious medical schools, Christian Medical College in Vellore, Tamil Nadu. "They were trying to impose an education that would make you a good doctor in France or Germany," says Arole. But the Aroles had a different goal: to promote health among the poorest of the poor. They worked at a mission hospital, then did their residencies and studied public health in the United States.

In 1970 the Aroles returned to India and established the Comprehensive Rural Health Project in Jamkhed, a small city that is about an eight-hour drive east of Mumbai. They chose the location—not far from where Raj Arole grew up—because it was in one of the poorest parts of the state, frequently drought-stricken almost to the point of famine. There was no local industry or train service. People stayed alive by cultivating small patches of sorghum. Irrigation consisted of asking the gods for rain.

When they came to Jamkhed, the Aroles started a small hospital in an abandoned veterinary clinic. A hospital was necessary to treat complicated illnesses and emergencies, and it gave the project political support and credibility. It also brought in fees from patients who could pay. (Those fees, together with donations, contribute the bulk of Jamkhed's \$500,000 annual budget for their village work even today.) But the Aroles knew that curative medicine could do very little for the poor. They needed to emphasize preventive medicine, and bring it to the villages. So they decided to engage the villagers themselves. A village health worker, Arole says, can take care of 80 percent of the village's health problems, because most are related to nutrition and to the environment. Infant mortality is actually three things: chronic starvation, diarrhea, and respiratory infections. For all three, you do not need doctors. "Rural problems are simple," Arole says. "Safe drinking water, education, and poverty alleviation do more to promote health than diagnostic tests and drugs."

When Salve and Sathe started their work in Jawalke, they were destitute. As members of the Dalit, or Untouchable, castes, they were considered nonpersons, so reviled that higher caste people would throw out food if it even touched the edge of their saris. They went barefoot in the village, as Untouchable women were not allowed to wear shoes. Sathe remembers standing for hours at the local water pump—which she could not touch—waiting for a higher caste woman to take pity on her and fill her bucket. Salve was so poor she washed her hair with mud and owned a single sari. When she laundered it, she had to stay in the river until it dried.

As the Aroles expanded their program to a hundred or more villages outside Jamkhed, they encouraged villages to select women from lower castes. "An educated woman likely comes from a high caste—she may not [want to] work for the poorest of the poor," says Arole. The Aroles believed that empathy, knowledge of how poor people live, and willingness to work were more important than skills and prestige.

Many village health workers were completely illiterate when they began training. When Sathe first started making rounds in Jawalke, she had never attended a day of school. Salve had completed

fourth grade. Sathe was married at the age of ten; Salve at two and a half. Every worker I met was married by age 13. Many had been abandoned by their husbands. Others talked about terrible beatings; Surekha Sadafule, who is 26, recounted how her husband threw her down a well after she bore him a daughter. Her parents would not allow her to come home. "You must suffer whatever he gives you," they said. "That is Indian culture."

The health workers' first task was to transform themselves, beginning with two weeks of training on Jamkhed's campus. The Aroles' daughter Shobha, 47, a doctor who is now associate director of the program, conducted some of the training. "I would ask, 'What's your name?' and they would say the village they come from and their caste. They had no self-identity," she says.

"They wouldn't look into your eyes or talk to you. They didn't even feel a woman has intelligence." Shobha's mother would ask the women, "Who is more intelligent—a woman or a rat?" "A rat," they would say. Shobha had the women practice saying their names in front of a mirror. She asked them, "Who is the one person who will never leave you?" Then they would walk behind a curtain to be confronted by the mirror. The training boosted their self-confidence. "Everyone can give technical knowledge," says Shobha. "What makes it successful is time spent building up their confidence." Training is an ongoing campaign: Every Tuesday many of the women return for two days to discuss problems in their villages, review what they learned the previous week, and tackle a new subject, such as heart disease. The women sleep on the floor under one enormous blanket they sewed together from small ones.

The health workers did not become village authorities instantly. It took months or years for a village to start listening, a process helped along by medical successes, such as delivering a high-caste woman's baby or curing a child's fever. The women also have backing from a mobile team—a nurse, paramedic, social worker, and sometimes a doctor—who visit each village every week in the beginning, then less and less often. The mobile team sees the hardest cases and reinforces the authority of the village health worker. Sadafule told me that she and the mobile team went to the house of a high-caste woman in her village. As the caste system requires, the woman made tea for the visitors, but not for Sadafule—an Untouchable. "The social worker put the cup in my hand," Sadafule said. She had prescribed medicine, but the high-caste woman didn't trust her, and asked the nurse the same question. The nurse confirmed the prescription and asked Sadafule to take the medicine back out of her bag and give it to the woman.

Villages with Jamkhed-trained health workers were gradually transformed by their presence. After three or so years, these villages started to look very different from their neighbors. Compared with the misery of the 1970s and 1980s in rural India, there has been some progress even in villages that Jamkhed does not reach: More women are postponing marriage until 18, the use of contraception has reduced family size, and more girls are attending school. But much has not changed. In the village of Kharda, nine miles from Jawalke, wastewater runs in open rivulets. Piles of cow dung swarm with flies. Children have frequent diarrhea, vomiting, and fevers. Some educated young people say they no longer believe old superstitions, but many told me they would rush a snakebite victim to the temple, not the hospital.

By contrast, Jamkhed's successes are dramatic. Thirty-eight years after its founding, the program has trained health workers in 300 villages. Among those that have been in the program for more than a few years, the traditional scourges—childhood diarrhea, pneumonia, neonatal deaths, malaria, leprosy, maternal tetanus, tuberculosis—have virtually vanished. Jamkhed villages have far higher rates of vaccination and an infant mortality rate of 22 per 1,000 births, less than half the average for rural Maharashtra. Almost half of all Indian children under age three are malnourished, while in Jamkhed villages there are not enough cases to register. In rural Maharashtra, 56 percent of births are attended by a health worker, compared with 99 percent in Jamkhed villages.

The transformation goes beyond health. In an area once nearly bald of trees, participating villagers have planted millions, and most residents have kitchen gardens that produce spinach, papaya, and other fruits and vegetables. All Jamkhed villages have clean water, and many have pipes carrying it to a pump in every backyard. Most houses have soak pits, a simple drainage system that eliminates standing wastewater.

Sathe and Salve have organized eight women's groups in Jawalke that make these changes happen. They taught members business skills and started a loan pool—everyone ponies up a few rupees, which are lent to one person at a time so she can buy dried fish to sell or goats to raise. When we visited Jawalke, the current campaign was installing toilets. Only 85 of the village's 240 houses had one, and Sathe was trying to organize workdays to get everyone to dig drainage and install toilets at once.

Perhaps the hardest territory to colonize has been inside people's heads, where superstition and stigma prevailed. To villagers in the Jamkhed area, disease came from the gods. When a new mother

died from tetanus because a dirty instrument was used to cut the umbilical cord, no one would take care of the child, says Salve. "People said the mother would become a ghost and take the child away." There were superstitions surrounding basic nutrition: Pregnant women were not supposed to eat very much, and new mothers would wait several days before starting to breast-feed. And sufferers of certain diseases, like tuberculosis and leprosy, knowing full well they'd be shunned by their neighbors, didn't dare to openly seek treatment.

Little by little, Salve and Sathe have banished such attitudes, demystifying health. Leprosy, for instance, is now treated like any other disease, which it is—leprosy is actually difficult to catch and curable with medication. The change is visible in the hands of Sakubai Gite. Now 32, she is in her sixth year as a health worker in the village of Panguhavan. She was in her teens when leprosy took parts of her fingers before it was cured. Her hands are gnarled and deformed.

Those hands are one reason Jamkhed wanted her. "We wanted to show that a cured leprosy patient can be a village health worker," Gite said. "Today I am even permitted to deliver babies."

Discrimination against Untouchables underlies much malnutrition, neglect, and disease, but Jamkhed fights back—often mischievously. During the famine of the 1970s, Jamkhed got money to dig wells. The Untouchables, who had to live on the outskirts of their villages, begged Arole to put in two wells for each village: One for the higher caste women, and one in their neighborhood, so Untouchables could use the pump.

Arole said no. He didn't want to foster caste discrimination. He called in an American geologist with a reputation as a diviner to choose the best spot to drill. "Your job," Arole told him, "is to go around the village looking for water—but to find it only where the Untouchables live."

Soon the Untouchables had water at their doorsteps. The higher caste women, who would not normally have gone to those areas, had to break with tradition—water was more important than caste. "When 50 villages were done, people began to wonder why we were only finding water in Untouchable areas," said Arole. "But by then it was too late."

A shock awaits us back at Kale's mother's house. From the dusty light of the door we see Kale lying on a cloth in the back of the hut with a baby boy between her legs, the cord still connected. A second shock: There is a twin, not yet born.

Salve washes her hands and does a pelvic exam while Sathe holds a flashlight. "The [second] child is breech," she announces. "We need to take you to the hospital."

"No, she should deliver here," an old woman pipes up. She is a neighbor, and before Salve and Sathe began working in the village, she worked as a midwife, or *dai*. But she has lost much of her business. Now she has delivered the first twin and wants to deliver the second. Many states in India are trying to train dais, but most lack basic knowledge about prenatal care and delivery.

"Then you take responsibility," Salve snaps at her. She crouches in front of a cooking fire in the yard, holding a razor blade in the fire with a pair of tongs.

"Don't cut the cord," says the midwife. "If you do, the placenta will go up into the heart!"

It's an old superstition; Salve shakes her head. She takes the now sterile razor and cuts the cord. Salve checks Kale again. "I've delivered twins safely before," she tells Kale gently. "But this baby is not in a normal position."

Kale says her labor pains have stopped. It is not a good sign. Over the objections of the dai, she agrees to make the trip to the hospital.

The medical brain drain from poor countries is creating new interest in community health workers, but they have been tried before. The giant experiment was the "barefoot doctor" program of China under Mao—workers were trained in preventive and curative health and paid in work points from their commune. China's experiment sparked dozens of smaller village health worker programs in the 1970s and 1980s. The hope was that they would grow to provide a cheap way to improve health for millions. But many failed, and today only a handful survive. In China, some of Mao's health workers became unlicensed pharmacists or village doctors after the dissolution of communes, focusing on curative services—the ones that pay.

Health experts are taking a hard look at the failures of decades ago, and have diagnosed two fatal problems. Many programs simply stranded their health workers without adequate training, support, or supervision. Also, most of the old programs were too top-down. The villagers themselves didn't choose what problems to attack, nor learn the skills to take over the job. As a result, the health improvements lasted only as long as an outside group was there with money.

Jamkhed, by contrast, has done both things right. It provides an ongoing weekly link for the village health worker to the hospital, a mobile team, a source of drugs and supplies, new skills and knowledge, and perhaps most important, it keeps her in touch with her fellow village health workers, which helps her stay motivated. Also, Jamkhed's health workers train villagers to diagnose and solve their own problems. "It is unique in truly getting people's involvement," says Carl E. Taylor, a professor emeritus at the Bloomberg School of Public Health at Johns Hopkins University in Baltimore, and the world's foremost guru of community health programs. Taylor was the Aroles' teacher. "They were among the most stubborn students I had," he says. "They rejected anything that gave decision-making to the professionals and didn't involve the people."

Elsewhere, successful village health worker programs have grown to be enormous. Nepal's government uses a vast network of volunteer village women, for instance. And the Bangladesh Rural Advancement Committee, or BRAC, runs what is essentially a substitute for a government health care system, with 70,000 village health workers in 70,000 villages. "Small is beautiful, but big is necessary," says Mushtaque Chowdhury, a BRAC executive director.

But Jamkhed is still an Arole production, now run by Shobha and her brother Ravi, an M.B.A. It currently works in just 120 villages, and the mobile team actively visits only 45 of them. Why has Jamkhed not scaled up? Ravi and Shobha argue that it has, just in other ways. It has added services—for example, micro-lending—and extends its reach through training. Jamkhed has given courses to 18,000 Indians and 2,000 others from 100 countries, and Jamkhed's staff travels to teach organizations elsewhere. There are small programs all over the world, from Nepal to Brazil, that use Jamkhed's principles, and the entire Indian state of Andhra Pradesh is adopting Jamkhed's methods, having sent thousands of government workers to Jamkhed for training.

Today, because of Jamkhed's business training and small business grants, its village health workers are no longer particularly poor. Salve, for instance, is one of the richer women in her village. She sells bangles and earrings, owns two houses, a flour mill, and, she proudly says, 15 saris; she also has a Jeep she rents out. This is a good strategy—the wealthier the health worker, the more weight she carries in the village. But it isn't the whole story. Perhaps the real secret of Jamkhed is how it motivates poor, sometimes destitute, women with overwhelming burdens to spend hours of their day on work that offers them no financial remuneration other than the occasional gift of a papaya from a grateful patient. Something clearly does. Most Jamkhed health workers are lifers. Very few leave.

The real benefits, the women say, cannot be measured in rupees. "When I started, I had no support from anyone, no education, no money," said Sathe. "I was like a stone with no soul. When I came here they gave me shape, life. I learned courage and boldness. I became a human being."

In 2005 Babai Sathe, Untouchable, was elected the *sarpanch*—village leader—of Jawalke.

Within minutes of Kale's agreement to go to the hospital, the driver brought the Jamkhed van around to the house. Sathe helped her in, along with a posse of women and, bizarrely, a hitchhiker in need of a ride. Kale's father and her four-year-old son sat on the floor in the front of the van. The new baby was on someone's lap.

The road was paved, but only a lane and a half wide. Each time a truck or bus came toward us, we swerved off the road. We passed bullock carts; the van's horn sounded like it was stuck in the "on" position. Salve wiped Kale's face and gave her water, and 45 minutes later we were at Jamkhed's hospital, met by three women with a gurney and whisked into the delivery room. Salve and Sathe were on either side of Kale, holding her legs and comforting her. She was still not having contractions, so a doctor gave her an injection of Pitocin to start them.

A nurse retrieved a fetal heart monitor, contained in a briefcase. Sathe held the briefcase while a nurse pushed the probe over Kale's belly. The only sound in the room was the machine's whooshing. Sathe's eyes darted around the room as the probe moved, not daring to meet Kale's. An eternity passed. There was no heartbeat.

The dead baby was a girl. Although in many Indian families a stillborn girl is no cause for sorrow, Kale felt differently. "I already had one boy," she said later, cradling her second one. "I really did want a girl." But the baby boy was healthy, born just under seven pounds.

Could the girl have been saved? Probably—if Kale had gotten a hospital sonogram at some point during the pregnancy. "We would have detected the high-risk pregnancy and had her give birth here," said Shobha. "But sometimes families are not cooperative, despite encouragement."

Seldom, however, if they are from Jawalke. In the end, the biggest health improvement brought by Sarubai Salve and Babai Sathe to this village is not the impending toilets, vaccinated children, backyard water pumps, vegetable gardens, or any other visible stuff. It is that the women of Jawalke know what constitutes a better life. And now they demand it. When Salve was at Kale's after the first

baby was born, three women had gathered on the edge of the property—all young, all pregnant. They were looking for Salve for their checkups.

She nodded to them; she had her hands full; they would have to wait for now.

But tomorrow, they knew, she would come around.

<http://ngm.nationalgeographic.com/2008/12/community-doctors/rosenberg-text/4>